Gas Journal

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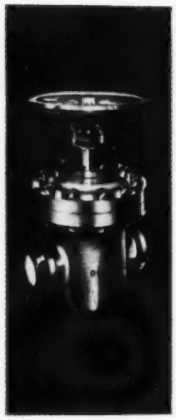

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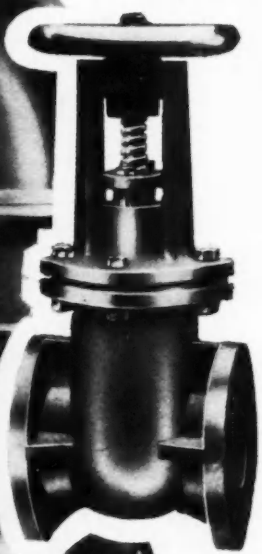

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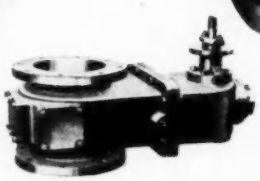

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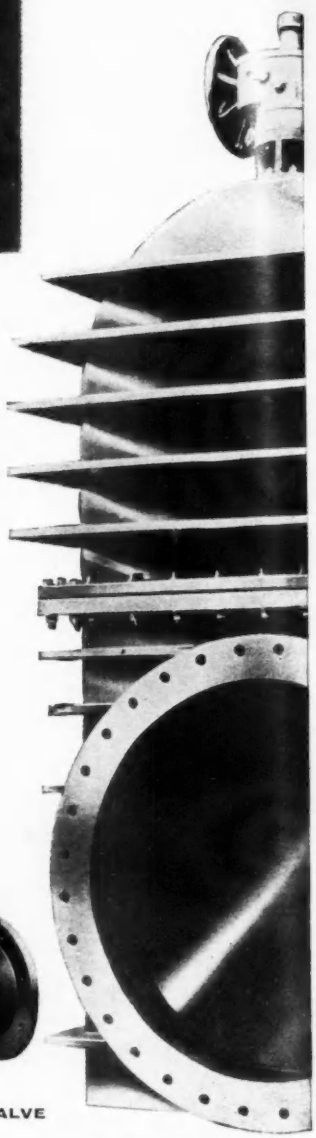

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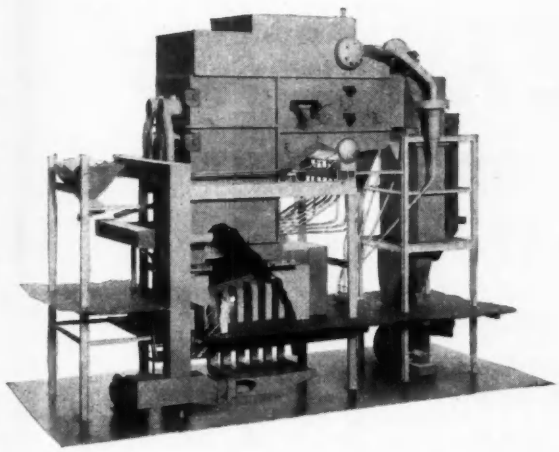

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WEDNESDAY, FEBRUARY 22, 1961

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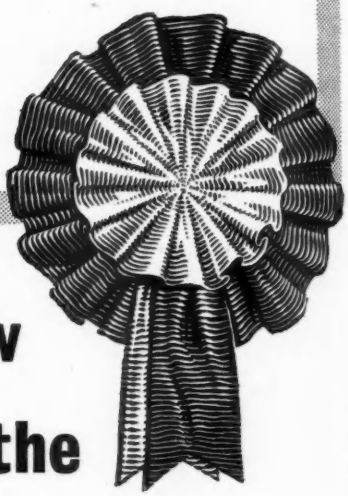

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Gas Journal

COKE OVENS • BY-PRODUCTS • CHEMICALS

The cheaper therm in perspective

THE days when the associations of engineers in the gas industry conducted their affairs in splendid isolation, safely barricaded against those fellows whose only responsibility was to ensure that consumers received their gas supply and such appliances as they might need, are long past. Today the commercial voice is heard in all places and at all levels, and although, notwithstanding the rapid dwindling of individual works, the gas engineer is still happily a long way from extinction, it can hardly be denied that there is a growing recognition of the importance of expanding the market for gas.

The trend is surely a happy one in that the engineer is given a sense of perspective which he lacked when wholly preoccupied with the intricacies of his art. And for the largely emancipated sales officer there is the glow of satisfaction which results from membership (better late than never) of the senior team.

It is particularly desirable that this influence should be felt at the present time when so much importance is attached to the creation of a cheaper therm and so much uncertainty exists about the precise ways in which it can best be achieved. This is exemplified in a paper given this month to the Yorkshire Juniors by Mr. George Davies, Divisional Sales and Service Manager of the Sheffield and Rotherham Division, East Midlands Gas Board.

Under the slightly obscure title 'Getting into Focus?' Mr. Davies puts forward a well reasoned argument in favour of considering the cheaper therm as a cog—a vital cog, admittedly—in the machine rather than as an end in itself. He warns against the belief (which we agree is current in some circles) that ' the millennium is just round the corner and the best we can do in the meantime is to hold on as well as we can for just long enough to let the technical miracles take place and solve all our problems.' No product ever sold itself, he reminds us, and points out that unless planned marketing goes hand in hand with progress in production, an improved technology could be an embarrassment.

The author believes that the gas industry waxes so enthusiastic about its product that it tends to forget that gas has no miraculous quality and no inherent charm that commends it to the public apart from the service it performs. ' The brutal fact is that the average housewife could not care less about our gas. What she wants from us or from anyone else who can supply it, is a cheap, convenient and efficient heating service in her home.' Since the nature of a business cannot be determined by the producer but by the customer, he advocates looking at the business from the outside—from the point of view of the customer and the market.

Mr. Davies insists that in every aspect of business there should be a ceaseless quest and urge for new ways of reacting to a developing situation. The industry must regard as one of its major obligations the need to improve itself consistently in every sphere of its activities—to expand and develop on all fronts as a planned offensive.

Having thus stated his broad theme, the author sets out to review activities on the sales and service side from the customer's point of view. He begins by emphasising how good service reinforces good publicity and, covering much the same ground as we did in these columns a few weeks ago, points out that many of the vital points of contact with the public are at a comparatively low level in the organisation and thus tend to fall below the range of vision of management. ' There is, therefore, intimately involved, the question of the correct motivation and inspiration of all our employees. . . . In my view, the problem is of such importance that every board could well justify a customer relations officer accessible to the highest level of management, with power to examine every point of contact with the customer.' We fancy Mr. Davies may have a point here, but we cannot help thinking that the officer in question would be a pretty busy chap!

Having recently expressed ourselves on the subject of the presentation of gas bills, ' cut-off ' notices, etc., it is gratifying to find Mr. Davies taking a similar view and agreeing that the widely held belief that gas is dear is based on a fallacy. Compared with the weekly expenditure on other household necessities, the fuel is cheap enough and therefore ' we are faced with an attitude of mind that will require some carefully considered publicity to remove.' If the industry is to secure a substantial share of the combined whole-house warming and water heating load, it will have to change the average customer's idea of what is a reasonable gas bill. Indeed, Sir Henry Jones' suggestion of an all-gas customer paying between £40 and £60 a year may not be so far-fetched.

The author passes on to discuss the fashioning of tariffs and maintains that even if the national tariffs anticipated recently by Mr. S. G. Deavin are a long time coming, the industry's short-term needs may well be

met by devising some form of national tariff with a common structure, but not necessarily common prices. Such a tariff should, he feels, have a more compelling name than the usual 'domestic two-part' label, and he suggests 'The Economy Tariff.' Well, why not?

The creation of attractive showrooms and new housing centres occupies a significant section of the paper, after which Mr. Davies settles down to discuss the building of the space heating load. Of this he is well qualified to speak since, in the field of room heater sales in particular, the Sheffield and Rotherham Division has a formidable record. It is hoped that they will fit 20,000 fires in the current year, apart from 14,000 central heating installations, while in the Sheffield district fires are being sold at an annual rate of 80 per 1,000 customers. Mr. Davies' objective is something far in excess of this, however, and he talks of getting gas heating into 80% of customers' homes which means the sale of 310,000 fires which at the present rate of selling will take 15 years but which, by stepping up annual sales to 30,000 fires, could be narrowed down to ten years.

Having covered some of the problems and benefits associated with the stimulation of this load, the author touches on the present place of the cooker load in the scheme of things. His comments are timely because there seem to be two current schools of thought which are equally confused about this subject. The first views with grave misgiving what is regarded as an extremely risky divergence from the traditional conception of the cooker as the be-all and end-all of gas sales, while the second is so excited about the prospects in the space heating field that it has to all intents and purposes already jettisoned the cooker business as being a thing of the past. Clearly the proper course lies between the two extremes, and we are pleased to note Mr. Davies' remark that 'We just cannot afford to fall away from the dominant position we hold in this market, nor to allow our energies to be directed entirely towards securing new markets to the peril of this.' He maintains that one sure way of keeping the cooking load in the long term is to increase the average domestic consumption by selling additional appliances. 'I see a mass space heating load and a mass cooking load as mutually supporting, because at the increased level of consumption our customers will get a greater benefit from their two-part tariff and so enjoy a cheaper average therm.'

There is much else of interest in the paper, but we would single out the fairly brief reference made to the need for building the commercial load by the introduction of special representatives. As Mr. Davies says, there is considerable scope for the sale of balanced flue space heaters and similar appliances in small business premises and community centres of one kind and another, and this type of selling requires special handling. Incidentally, it is interesting to note that the East Midlands Board has introduced a two-part tariff for non-domestic consumers similar to that obtaining for domestic; it is described by the author as 'a formidable weapon to meet the competition which is particularly fierce in this relatively small but very important market.' Potentially, is the market really so small?

Mr. Davies and other commercial officers like him are to be congratulated not only on showing their production colleagues what is happening on the selling front, but on giving them a long look at the industry from a viewpoint which, although by no means detached, is at least one which shows gas in relation to a fiercely competitive market.

Determination and optimism in U.S.A.

THE gas industry in America is exhibiting great determination in facing the 1960's, as is evident from the 'American Gas Association Monthly' for January last. The industry, said Mr. Lester T. Potter, President of the American Gas Association, was preparing to meet its challenges with the most aggressive and imaginative action programmes in the history of the gas business. With these programmes, they believed they would create a climate wherein they would achieve more spectacular growth and strength in the sixties than in the past 100 years.

Such statements as this would appear not to be mere optimism, for the plans of the Association through its Promotion, Advertising and Research Plan (PAR) take them out of such realms. PAR will introduce in 1961 its first industrial promotion programme, promoting new applications in the metals, textiles and chemical industries.

Said Mr. Potter, 'The industry's growing determination to maintain and extend its markets is evidenced in positive terms by PAR's response to challenges in the basic load field of home heating. A new consumer campaign, aimed at selling the advantages of gas for home heating, was added to the gas industry's advertising programme in 1960.'

This national advertising and promotion, is helped by a Public Information programme, which has been operating for seven years, 'building a more favourable climate for gas'. This organisation held last year a survey of the industry's resources and needs in the public relations field. For 1961, a programme has been chartered for increased public relations action throughout the industry.

On the question of appliance sales in 1961 and the next ten years, Mr. Edward R. Martin, Director of Marketing and Statistics to the Gas Appliance Manufacturers Association, cast a note of more restrained determination and even of dampened optimism. He thought that the next ten years would be typified by relatively substantial increases in consumer demand, rather than by spectacular and sudden sales increases. he also thought that the possibility of a 'moderate recession' during the early sixties could not be entirely discounted.

As for 1961 as a whole, while no spectacular upturns appeared imminent, there seemed to be an excellent chance that the general economy would improve in the second half, thus creating increased sales opportunities for the gas appliance and equipment manufacturer.

Here is not the unqualified certainty of great strides forward that was evinced by the gas industry itself. Perhaps the intention of this guarded attitude on the part of Mr. Martin is to create the sense of 'healthy urgency' among appliance manufacturers, that the American gas industry itself is, according to Mr. Potter, demonstrating. A little more of this urgency could well be used on all fronts, and on both sides of the Atlantic.

From a paper read to the Midland Junior Gas Association.

Some first-hand impressions of a gasworks in North Germany

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and

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THIS paper is the outcome of observations on the German gas industry made by the authors while engaged on National Service in Germany.

A social visit to the Wilhelmshaven-Rüstringen Gas and Electricity Company resulted in much discussion by the authors on the layout, production techniques and control of a typical small North German gas works.

The German gas industry is not nationalised, the supply of gas and coke being undertaken by private or municipal companies. In many cases, the gas, water and electricity services in a town are in the hands of one organisation.

The Wilhelmshaven-Rüstringen Gas and Electricity Company is an associate company of the Thuringer Gas Company, of Cologne, and is responsible for coke, gas and electricity supplies in and around Wilhelmshaven. Additional purified gas is purchased from Bremen, a town of 1 mill. inhabitants, some 60 miles away on the River Weser.

Bulk supply sale

A bulk supply is sold to the gas supply company in Jever, a neighbouring town of 10,000 inhabitants.

Wilhelmshaven is in East Friesland, North Germany, on the west side of the Jade Basin, and is some 80 miles from the Dutch border.

There are no heavy industries in the area, but the nearby Olympia typewriter and office-machinery works employing 12,000 workers, and other light industries, contribute to the Company's 30% industrial gas load.

There is a traditional preference in Germany for the free-standing stove, or for central heating fired by coke or gas. In England, the gas fire has developed as a substitute for the open coal fire, but this has not taken place in Germany, and in Wilhelmshaven in particular, coke is the preferred fuel for domestic space heating.

In a typical example of gas installations in a modern dwelling, gas is used in a refrigerator, for cooking and for water heating. Occasionally, it may be used for space heating in the combination cooker/space heater. This dual role is the logical development of the habitual use of the gas oven for warming the kitchen on cold mornings.

Gas is generally sold on a quarterly or prepayment basis. The 'sliding scale' method of charging is not common in Germany, and in Wilhelmshaven gas is sold at a flat rate equivalent to 1s. 10d. per therm.

A boiler coke sized between roughly ½ in. and 1 in. is marketed at the equivalent of 7s. 9d. per cwt. delivered. The corresponding price for larger grades is 9s. 7d. per cwt.

Tradition and relatively low cost have, therefore, established the value of coke for the domestic consumer in Wilhelmshaven. Consequently, the Company regard coke as their more important product, and it is to this end that the works control is directed.

The carbonising plant is a Deutsche Ofenbau Gesellschaft installation of 27 intermittent vertical chambers, arranged in four beds of six and one bed of three. Each bed has its own inbuilt producer working on natural draught, and the secondary air is preheated in inbuilt recuperators.

The chambers are of silica brick construction, 16 ft. 6 in. deep and 9 ft. 3 in. wide, and have a continuous taper from 9.85 in. wide at the top to 14.57 in. at the bottom.

Each chamber holds 2½ tons of coal, and for an optimum carbonising time of 18 hours, 37 chambers are charged daily, yielding approximately 1.5 mill. cu.ft. of coal gas and 75 tons of coke from 100 tons of coal.

The coke is quenched in a skip and passed either into a storage hopper or on to the ground beside the screening plant.

During an eight-hour day shift, a coke crusher and screening plant are fed by a belt bucket elevator from the storage hopper and by belt conveyor from the ground storage area.

No. 1 Grade or unscreened coke is transferred in rail bogeys from the screens to the chamber house, where it is elevated by hoist to the producer coke storage hopper.

The type of coal carbonised has an ash content of 6 to 8%, contains 25% volatile matter and 8 to 12% moisture, and is below ½ in. in size. Five grades of coke are made varying in size between 2.76 in. down to .4 in.

Charge steaming provision

Gas leaves the chambers at approximately atmospheric pressure through liquor-sprayed offtake pipes. Provision is made for the direct admission of producer gas from the setting into the foul main for calorific value control.

Provision is also made in the chambers for charge steaming, but either of these methods would reduce the coke production and, therefore, are not used.

Calorific value control is mainly by variation of the benzole extraction rate, and to a smaller extent by varying the gas pull on the chambers.

The main annual manufacturing statistics are given in Table I. A figure for gaseous thermal yield has been

quoted, but it is not the practice to calculate this figure at Wilhelmshaven.

The carbonising efficiency is assessed from the coke produced for sale, and every effort is made to keep this at a maximum.

TABLE 1
Summary of current annual manufacturing statistics—gas works, Wilhelmshaven

Item	Annual total	% of coal carbonised
Coal carbonised	32,500 tons	—
Coal gas produced	500 mill. cu.ft.	—
Gas made per ton coal carbonised	15,300 cu.ft.	—
Calorific value	473 B.t.u. per cu.ft.	—
Gaseous thermal yield	72·2 therms per ton	—
Total coke made	24,640 tons	75·8
Coke to producers	4,870 tons	15·0
Dust to boiler	70 tons	·2
Coke made for sale	19,700 tons	60·6
Tar made	1,500 tons	4·6
Benzole made	150 tons	·5

During carbonisation, the charge must reach a maximum temperature of 1,020° C., and to achieve this, a heating flue temperature of 1,200°C. is necessary.

Under damper control

Producer gas is admitted under damper control to the first of seven passes in the heating flues, while the preheated secondary air is admitted in regulated proportions to the first four passes. Waste gases leaving the top of the flues pass downwards through the recuperators into an underground waste-gas main.

Waste-heat steam at 100 p.s.i. saturated is generated in a horizontal fire-tube boiler, and the rate of production is varied by regulating a damper by-passing waste gases directly to the chimney. Owing to the low summer steam demand, an induced draught fan is only run in winter.

A second dust-fired boiler is kept under a slow fire as a standby. Under normal circumstances, steam is used only for process work, the average demand being 1,500 lb. per hour. The feedwater, at 3° hardness, is taken from the town supply, and internal feedwater treatment is employed.

The crude coal gas leaving the chamber house at a temperature of 195° F. passes to a vertical cylindrical atmospheric condenser, which it enters at 180° F. and leaves at 158° F. Three horizontal water-tube condensers in series complete the cooling of the gas to 85° F.

There are three independent water supplies available—town water at the equivalent of 3s. 1d. per 1,000 gal.; well water and 'cistern' water.

The latter is normally used for cooling purposes, and is circulated from an underground cistern through the condensers to the gasholder tank, and from there back to the cistern. Make-up water is from the well supply.

A three-bladed 'eccentric-drum' type exhauster is driven at a constant speed by belt from a countershaft, which in turn may be driven by either of two prime movers.

Normally, the countershaft is driven by a 17-h.p. electric motor, but a horizontal steam engine is used in peak electricity demand periods to reduce the load on the Company's electricity network. The peak demands usually arise during the pre-Christmas period from the very elaborate shop and street decorations in the town.

The exhauster vacuum is automatically controlled by a by-pass governor, which is the only method of regulating the gas stream.

Tar fog is removed initially in a Pelouze and Audin extractor, and finally in an electro-detarrer operated at 20 mA. E.H.T. current.

Unlike usual British practice, the insulator is electrically heated, and is interlocked with the E.H.T. supply.

It is appropriate at this point to consider the standards of gas composition set in Germany, since they affect the next stage of the process.

The required standards are set by the Deutscher Verein von Gas und Wasserfachmännern—D.V.G.W.—the German Association of Gas and Water Engineers, and are given in Table 2.

TABLE 2
D.V.G.W. gas standards

Item	Maximum concentration
1. Hydrogen sulphide	·2 g./100 cu. m. (·089 grains per 100 cu.ft.)
2. Ammonia	·3 g./100 cu. m. (·13 grains per 100 cu.ft.)
3. Naphthalene	5 g./100 cu.m. (2·2 grains per 100 cu.ft.) Naphthalene saturation temperature to be below ground temperature.
4. Oxygen	·5%
5. Carbon dioxide	2%

The attainment of the standards for items 3, 4 and 5 is desirable, but it is compulsory to attain the standards for 1 and 2.

The concentration of ammonia allowed is such that the purifiers cannot be relied on not to pass an excessive quantity. Ammonia washing, therefore, is in two stages.

The first stage, following the detarrer, is in an eight-bay rotary washer, working at about 80°F., using as a washing medium the very weak ammoniacal liquor produced in the secondary ammonia washer.

The ammonia content of the crude gas is reduced from about 200 grains per 100 cu.ft. to 2.5 grains per 100 cu.ft. at the outlet of the washer.

Ammonia concentration reduction

The second stage, following dry purification, is in a three-section bubble cap washer, where the ammonia concentration is reduced to well below the required standard.

The dry purification plant is an installation of four cylindrical boxes, completely housed in a brick and concrete building with excellent lighting, ventilation and steam space-heating facilities.

A steady ambient temperature of about 77°F. is maintained throughout the year. Each box, in welded steel, holds 60 tons of oxide in eight layers, supported on wooden grids.

The gas flow is split so that it passes through one layer per box, as is the case with tower purifiers. The boxes take two days to empty using pneumatic tools, and the oxide is discharged down a central chute to the floor below, from which it is removed to a storage ground or broken up in a disintegrator beneath the boxes.

Air for revivification is supplied by an electrically-driven blower to each box inlet, and is normally admitted to the first taker. Water sprays are fitted in the box inlet and

outlet chambers to help in maintaining a sufficiently high moisture content in the oxide.

The inlet, outlet and transfer valves are water sealed and flow reversal is by disc valves. Provision is made for inserting blanks in the inlet and outlet mains, thereby making normal rotation possible, if necessary, when a box is off for refilling. Typical operating conditions for the installation are summarised in Table 3.

TABLE 3
Purifier operating conditions

Taker	H_2S concentration grains/100 cu.ft.	Temperature °F.
Inlet 1st	218	83
Inlet 2nd	100	99
Inlet 3rd	45	95
Inlet 4th	3	92
Outlet 4th	·01	86

As a purifying medium, an artificial oxide based on bog ore and ground Lux has taken the place of Lux, which became inactive too quickly owing to a general increase in particle size.

Direction of flow

Rotation is carried out every two to three weeks, but the direction of flow is reversed daily to prevent a crust forming at the surface of the oxide bed. This would appear to be quite effective since the back-pressure, even after a year, is under 1 in. w.g. per box.

The oxide is fouled in two stages; the first is over a period of about 12 months, after which the partly spent oxide is discharged with a content of about 25% sulphur (wet basis).

The second exposure is a little shorter, giving a final spent oxide containing 42% to 46% sulphur at a moisture content of 5%. A total of 120 tons of spent oxide is sold annually for sulphuric-acid manufacture.

Following dry purification, the gas undergoes shock cooling, to remove the naphthalene to satisfy the D.V.G.W. standard without the use of a solvent. After treatment the naphthalene content is about 2 grains per 100 cu.ft. in winter and 4 grains per 100 cu.ft. in summer. The temperature of the gas will now be suitable for the efficient operation of the secondary ammonia washer.

It is economical to extract benzole at Wilhelmshaven since the coal:coke price ratio is approximately 1:1.35.

The extraction rate is normally .5% of the coal carbonised, but may be lowered on occasions to .1% in order to raise the calorific value of the gas. The benzole washer, following the secondary ammonia washer, is in two sections. The top part consists of two bubble-cap stages through which creosote oil is circulated. The bottom part is a single bubble-cap stage and is a standby secondary ammonia washer. Benzolised oil is distilled in a steam-heated, atmospheric pressure still, housed in the machine room.

Gas metering is by a Connersville-type meter situated in the machine room.

The works layout is such that one man, with additional labour in the chamber house, can control the entire plant. The chamber and purifier houses are situated immediately on either side of the machine room, while the naphthalene removal plant, benzole washer and secondary ammonia washer are in a recess between the purifier house and machine room.

Despite the close placing of plant, there is no feeling of being over-crowded; but it does, however, undoubtedly ensure the most efficient utilisation of manpower.

The annual average daily send-out is 2.1 mill. cu.ft., varying from 2.65 mill. cu.ft. in mid-winter to 1.75 mill. cu.ft. during the summer holiday period. Gas manufacturing plant to supply the additional .25 to 1.15 mill. cu.ft. per day would clearly operate at a poor load factor, and could not compete with gas bought from a grid system, besides the additional coke made might be difficult to dispose of.

To balance its gas-make with output, therefore, the Company purchases gas from an undertaking in Bremen, which specialises in providing bulk supplies to smaller towns. The pipeline bringing gas to Wilhelmshaven is 54 miles long, and increases in diameter from 8 in. at Bremen to 12 in. at Wilhelmshaven. It is a bitumen-wrapped steel main, fed by an electrically-driven Connersville compressor rated at 2 mill. cu.ft. per day.

The main holder station of the Wilhelmshaven Company is about a mile from the works, and it is here that the Bremen supply is received at a pressure which varies during the day from 1.4 to 7.1 p.s.i.

The storage capacity of this station is 850,000 cu.ft. in a column-guided holder, and 350,000 cu.ft. at 10 atmospheres in a spherical welded-steel, high-pressure holder, worked in conjunction with a 120-h.p. reciprocating compressor.

In addition to the 200,000-cu.ft. holder at the works, there is a 140,000-cu.ft. holder at a second holder station and coke storage ground near the centre of the town.

Gas is supplied to consumers at 6 in. w.g., the pressure at remote points being maintained during high-demand periods by automatic governors from a medium-pressure system operated at 100 in. w.g.

The medium-pressure system is also used to provide approximately 100,000 cu.ft. daily to Jever, 10 miles away.

There is every indication that the present 6% annual increase in gas output will be maintained. It is unlikely, however, that coke consumption will rise at the same rate, so the additional gas will have to come from outside. To enable more gas to be taken from Bremen, the Company intends to install a second spherical high-pressure holder within the next few years. It is aware too of the possibilities that may be opened up if further natural gas supplies are discovered in North Germany.

Oldenburg, only 35 miles away, is now entirely supplied with natural gas from local wells—.6 mill. cu.ft. daily at a calorific value of 1,130 B.t.u. per cu.ft. There is also the more distant prospect of natural gas from North Africa being brought to Germany through France.

DISCUSSION

OPENING the discussion the president, **Mr. R. W. Nelson,** Birmingham, drew attention to three points of particular interest: (a) The low carbon monoxide content of the gas produced, (b) that there was a good demand for coke, and (c) that one man could control the entire plant.

Mr. S. Brockbank, Newcastle-under-Lyme, enquired whether the installation of gas in flats in Germany was on similar lines to our own, *i.e.*, whether they had their own individual services. The use of a cooker as a space heater seemed to be rather novel, and he asked whether it was an appliance without a flue and whether it heated other parts of the premises. Mr. Brockbank noted that the Wilhelmshaven works aimed to produce good quality coke for use in closed combustion stoves while the coke used on the producers represented 15% of coal carbonised.

He commented that all the works plant was located in the so-called 'machine house' and wondered what safety precautions were taken and what purging was done before opening up the purifiers.

Mr. J. S. Goode replied that individual services and

meters for the flats were provided. In houses, all services (including water) were generally confined to the ground floor.

Inside the cooker/space heater there was a flap which could be operated to divert the hot gases from the oven into a convector heater so that the appliance could be used either as a cooker or as a space heater. In both cases, the products of combustion were ducted away. As to the fuel consumption of the producers: Trials had been carried out in the past to determine the optimum carbonising time for the type of coal carbonised. The Company were satisfied that they were achieving the best possible performance.

There was no purging with inert gas before opening up purifiers. The usual procedure was to purge with steam. He could give no details of any additional safety precautions taken, but he could say that in all buildings on the works no naked lights or other sources of ignition were permitted.

Mr. J. R. Kilvert, Birmingham, asked whether it was the practice for the gas produced to be charged on a thermal basis. As to the quality of gas supplied, he noted that the gaseous yield was not normally determined—instead the carbonising efficiency was determined from the coke produced for sale, which contained 4-6% moisture. The crude coal gas left the chamber house at 190°F., he pointed out, and entered the condenser at 180°F. leaving it at 158°F.—a temperature drop of only 22°F. Finally, he had grave doubts whether it was good practice to have all ancillary plant under cover.

Mr. J. S. Goode said that the gas produced was sold on a volume basis, but since it was at a standard c.v., it was in fact sold on a thermal basis. The coke produced was very dense and therefore less capable of holding moisture. He agreed that the temperature drop after the gas had passed through the primary condensers was only 22°F., but he considered that this represented a significant reduction in the total heat of the gas at that temperature.

Mr. L. H. Hardy, Birmingham, wanted further information about the installation of apparatus in the flat referred to and asked whether there were two flues and if not, what steps were taken to prevent the products of combustion from one appliance blowing down the other.

Mr. J. S. Goode replied that it was rather more common to see the products of combustion ducted away in Germany, but he had no knowledge of any special arrangements to prevent gases from one flue blowing down another.

Mr. S. C. Crathorn, Wolverhampton, noted that the Wilhelmshaven Company was quite different from any utility undertaking in this country in that it was responsible for coke, gas and electricity production in and around Wilhelmshaven.

Mr. J. S. Goode said that at the Tingley works of the N.E. Gas Board, the insulator of the electro-detarrers was electrically heated; we in this country were therefore not behind Germany in this respect. The purifiers at Wilhelmshaven might look smaller than ours, but the space inside them was used more effectively in that there was only 2 in. between the layers.

When they were emptied, the interior was painted with an anti-corrosive paint and this accounted for part of the longer time taken to discharge and refill them. A major problem was to prevent loss of moisture and it was the practice to spray water into the inlet chambers to humidify the gas—heat dissipation was no problem since the H_2S content of the gas was low.

With regard to the annual increase in outputs allowed, he indicated that the consumption of gas per head of population in Germany was less than in this country. This, he felt, was due to their preference for space heating.

Mr. B. G. H. J. Hawkings, Coventry, Junior Vice-President, noted that Wilhelmshaven produced hard coke which in this country they were given to understand was unsuitable for space heating. He noted too that there was a wide range in the size of coke produced and wondered what size was used for boiler firing.

He also asked what extremes of temperature were encountered at Wilhelmshaven and what anti-freezing precautions were taken, and what competition there was from oil as an alternative to coke.

Mr. J. S. Goode agreed that the coke produced at Wilhelmshaven was hard and very dense. Crushers varied the size of coke produced for sale, but little large coke was in fact sold. He also agreed that its reactivity was lower, but once alight, it gave a good fire.

Wilhelmshaven imported a good deal of the gas it distributed from Bremen, but he was unable to say why no high pressure system had been developed, neither had he any information as to anti-freezing precautions for gas holders, except that the temperature there was often below freezing in winter, so some form of precautions must be necessary.

The costs of gas production at Wilhelmshaven were not computed in the same way as in this country, and oil was not available at a competitive price. Any reduction in sales was more likely to come from the development of natural gas supplies.

Mr. R. W. Nelson, Birmingham, President of the Association, asked whether any high pressure gas came out of the normal system.

Mr. J. S. Goode replied that the gas was compressed at the holder station to 100 in. w.g. and fed into the low pressure system at strategic points from the medium pressure system, to maintain pressures at periods of high demand. The gas imported from Bremen went into the holder station before being re-distributed.

Mr. W. E. Dobson, Birmingham, enquired what wage labourers in Germany received. He was interested to note the fairly favourable coal:coke price ratio and asked whether there were any smoke control areas in Germany.

Mr. J. S. Goode replied that labourers in Germany were paid about 4s. per hour, but the cost of living was slightly lower than in this country.

Mr. J. K. Morton, Birmingham, asked if there was any standard of c.v. control.

Mr. J. S. Goode, said that the c.v. had to be declared and inspectors tested for H_2S and ammonia at the same time that c.v. tests were made. It was customary to rely on the works engineer to maintain the c.v., but any failure to do so could result in his prosecution.

Mr. E. Arthur, South Staffs Mond, expressed surprise that the plant at Wilhelmshaven, as described in the paper, had been erected since the last war—its design was about 40 years behind the times! Its operation during the summer months must present difficulties owing to the heat, and he asked what precautions were taken, particularly when emptying the purifiers, which were housed in a building, and whether non-sparking tools were used.

Mr. J. S. Goode replied that the plant was mainly of pre-war pattern. It had been badly damaged during the war, and although re-built on the original lines, advantage had been taken of several new developments—electro-detarring being an example.

He agreed that operating conditions in the chamber house during the summer months were not perfect. Ventilating fans in the roof were used, however, during chamber charging and operating conditions were by no means as bad as might be supposed. Elsewhere on the works, conditions were very good.

Purging of purifiers was done by using steam and the building was vacated during the operation. The oxide was therefore saturated and the danger of sparking very much less.

Gas on the Continent

Automatic flame-failure for gas-fired heaters

THIS article describes a new flame-failure and ignition controller for gas-fired heaters, made by the Danish firm Danfoss. It has been approved by the Danish and the West German Gas Equipment Testing Offices. The makers claim it is efficient, reliable and economic, and is suitable for all types of gas.

The controller consists of two parts, a control unit and a shut-off valve; the former is mounted on the combustion chamber. The pilot-burner is provided with two jets, one which ignites the main burner, while the second provides a watch-flame, which acts on a bi-metal.

On pressing the start-knob a flow of gas passes to the pilot-burner; the flow to the main burner remains closed. The equipment must be so arranged that the pilot-burner can be lit while the start-knob is depressed. The watch-flame, which automatically lights from the pilot-flame, then acts on the bi-metal so that an electric current can flow to operate the solenoid of the main gas valve.

If one releases the start-knob after some 15 seconds the main burner will have been lit by the pilot-burner and the heater will continue in operation.

If the burners fail the reverse process will close the main gas valve in 15-45 seconds.

The controller can be supplied in three sizes, GS, GSV and GSR, covering normal capacities of from 1 cu.m. per hour to 6.5 cu.m. per hour and can operate with Danfoss automatic electric ignition equipment. *G. Stig. Gastek-nikeren*, Oct. 7, 1960, **49,** 330.

★

Oil cracking plant in Winterthur gasworks

THE increased use of oil-fired central heating and electric house heating has led to altered coke and gas demands so that the relative advantage of the oil-cracking gas plant has increased. It was agreed in February, 1958, to install such a plant working on the Didier-Segas principle at Winterthur.

Owing to difficulties arising from the close proximity of buildings around the gasworks, installation was only started in early 1960 and completed in September, 1960.

The plant has a capacity of 16,000 cu.m. per day at 4,250 kcal. per cu.m. and in order to cater for a variety of fuels, is arranged in three towers; steam superheater, catalyst and air-preheater.

The Segas catalyst is arranged in a single layer in the middle tower. Gas purification is by a new condenser developed in Winterthur giving separation of tar and water in one step.

A record of 18 days' service shows 300 hours operation varying over eight to 24 hours daily. Approximately 150,000 cu.m. of domestic gas was produced at 4,200kcal. per cu.m. with an average oil consumption of .565 kg. per cu.m.

The plant has operated mostly at 75% of its output but short tests have shown that the rated output can be reached. It runs quietly without causing nuisance.

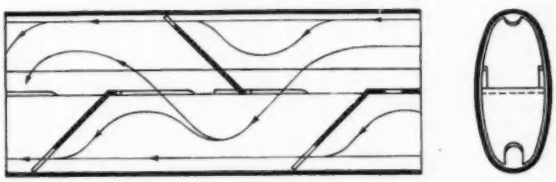
W. Zankl, Das Gas-und Wasserfach, Nov. 18, 1960, **101,** 1220.

★

Noise reduction in gas-fired water heaters

EVER-INCREASING importance is attributed to noise in domestic heaters; this article describes various types of inserts which can be used to improve heat transfer and reduce noise.

The cause of the noise in gas-fired water heaters is the bad heat transfer and local boiling in the almost stationary water-side boundary layer. This formation of steam bubbles in the boundary layer and their rapid collapse as they move towards the cooler water in the tube, can sometimes lead to appreciable vibrations.



A suitable insert, as shown in the illustration, can do much to promote mixing in the boundary layer and hence reduce noise. The makers also claim quicker heating up, less wasted heat storage, higher maximum loads and reduction of unit size.

Das Gas-und Wasserfach, Dec. 2, 1960. **101,** 1276.

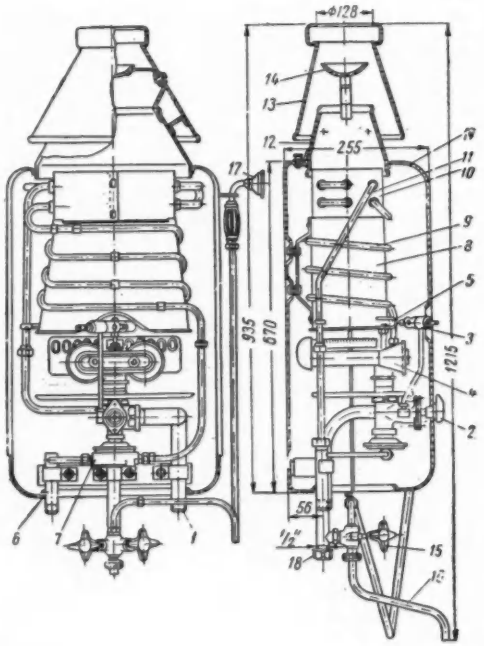
Gas-fired water heater

THE illustration shows the latest model of the gas-fired water heater, type 'Leningrad—2', designed by the Lengazapparat works in Leningrad. The technical data of this heater are summarised in the following table:—

	Nominal value	Permissible Range
Heat input in B.t.u. per minute	1,000	890-1,040
Useful heat output in B.t.u. per minute	800	720-840
Efficiency	80%	at least 80%
Water flow in gal. per minute:		
Heated to 50°C.	1	—
Heated to 25°C.	2	—
Gas consumption (950 B.t.u. per cu.ft.) in cu.ft. per hour	63	—
Waste-gas temperature	220°C.	—
Height	3 ft. 1 in.	
Width	1 ft. 6 in.	
Depth	10 in.	
Weight	40 lb.	

The quantity production of this type will start shortly.

B. I. Mlodok, Gazovaja Promyshlennost. (Gas Industry). November, 1960. **5,** 17.



Legend:

1, Gas main
2, Interlocking gas valve
3, Ignition device
4, Burner
5, Bi-metal spring
6, Water main
7, Gas-water interlock
8, Fire tube
9, Spiral tube
10, Ribbed heat exchanger
11, Water overflow pipe
12, Outlet for products of combustion
13, Draught excluder
14, Deflector
15, Twin stop valve
16, Outlet spout
17, Rose for shower bath
18, Nipple for hot-water connection
19, Split housing

★

Gasification of shale tar

A NEW reactor has been developed in the U.S.S.R. for the gasification of liquid fuel, based on the diluted phase fluid bed principle. The gasifier consists of a regeneration zone and a reaction zone, separated by a neutral zone of lateral slots.

Over the first 13 days of the test, a total of 1.03 mill. cu.ft. of gas with a calorific value of 790 to 900 B.t.u. per cu.ft. and with up to 27% of fine hydrocarbons, was produced.

M. M. Barshchevski. Gazovaja Promyshlennost (Gas Industry). October, 1960, **5,** 12.

★

Shorter working hours in gasworks

THE introduction of the five-day week in German gasworks and the accompanying reduction of working hours from 48 to 45 per week has required an increase of 6 to 8% in the personnel of some works. At the Baden-Baden municipal gasworks, a thorough investigation has made it possible to avoid any increase in manpower by better organisation.

The retort gang, consisting of a foreman, a retort house attendant, an engine man and a stoker who used to have one free day every three weeks, now work to a new time-table, whereby they have two days off one week, say from Saturday, 2 p.m. to Monday, 2 p.m. and next week from Monday, 6 a.m. to Wednesday, 6 a.m. The yard gang duties have also been re-arranged and one half works in the first week on six days and the second half in the second week so that half the men are on duty on Saturdays. The purchase of a fork lift truck was a great help.

Improvements were carried out in the coal elevators and their speed was stepped up. Suitable arrangements were made so that the coal arrived at a uniform rate and peak loads were cut out. In the service departments, a service van was purchased and is used instead of public transport or going on foot, when gas meters are to be installed or to be replaced, or in other cases of trouble. In the mains and distribution department, the introduction of new pipe clips has saved a lot of time in case of pipe fractures, as the whole length need not be dug out and replaced.

In the public gas lighting department, the lamp attendants used to work 52 hours a week. Most of the men have been persuaded to buy motor-assisted bicycles, and a scooter was purchased by the works for the foreman. The previous nine town areas were reduced to eight and a new rota was worked out which gave every man one 2-day break and one 3-day break every five weeks, within the framework of an average 45 hours per week. Rebuild-

ing of the carbonising plant and improvements in the purifier plant have also saved a number of man-hours.

A punched card machine was installed in the office and meter readings were changed to two-monthly intervals. Mechanised accounting was introduced. It is, however, emphasised that these measures appear to have exhausted any potential savings and that a further reduction of working hours to say 40 hours per week would definitely mean an increase in the labour force.

F. Wurz. Das Gas-und Wasserfach. January 16, 1959. **100,** p. 57.

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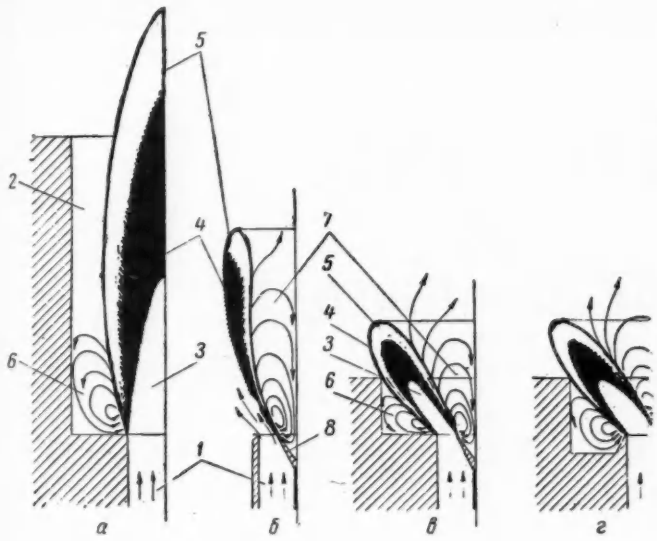
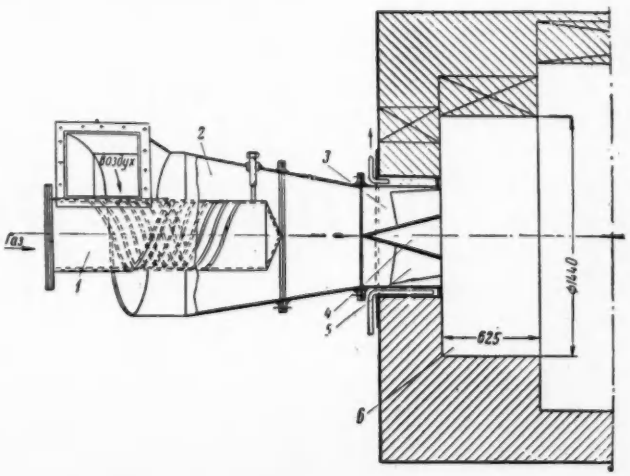
Premixing burner for low-B.t.u. gas



THE Institute for Power Engineering (ENIN) at the U.S.S.R. Academy of Sciences has developed a burner of high unit capacity on the basis of two-way ignition of a turbulent jet, the homogeneous composition of which is ensured by intensive mixing of gas and air.

Fig. 2.—ENIN-burner for a capacity of 600,000 cu.ft. per hour of low-B.t.u. gas.

Left centre, gas inlet; left top, air inlet.
1, Gas nozzle.
2, Mixer.
3, Outlet tubing.
4, Conical stabiliser.
5, Aerofoil vanes (six).
6, Shortened tunnel.
625—2 ft. 1 in.
1440—4 ft. 9 in. diameter.



The illustration shows the principle of the two-front process of combustion.

Sketch (a) indicates how a stable flame inside the refractory tunnel is achieved by recirculation of the products of combustion which supplies heat to the root section of the gas-air stream.

Sketch (b) shows how the central stabilisation of combustion is achieved by utilising the heat of recirculating products of combustion behind a central cone.

Sketches (c) and (d) show alternative versions of a two-fronted burner in which central and peripheral circulation are combined. The second illustration shows the burner design for an industrial furnace which ensures steady combustion of 530,000 to 600,000 cu.ft. per hour of low-B.t.u. gas, with a heat intensity of up to 560,000 B.t.u. per cu.ft. and an excess air coefficient from 1.08 to 1.12.

V. A. Speisher, V. I. Andrejew and O. V. Shimanovski. Gazovaja Promyshlennost (Gas Industry). July, 1960, **5,** 20. 7 pp. 7 ff. Bib.

Fig. 1 (left).—Stabilisation of combustion of a gas-air mixture: a, In a refractory tunnel. b, By means of a body of non-streamlined shape. c and d, Two-front ignition of mixture.

1, Nozzle.
2, Refractory tunnel.
3, Core of torch.
4, Combustion zone.
5, Hot gas envelope.
6, Peripheral stabilisation zone.
7, Central stabilisation zone.
8, Conical body of non-streamlined form.

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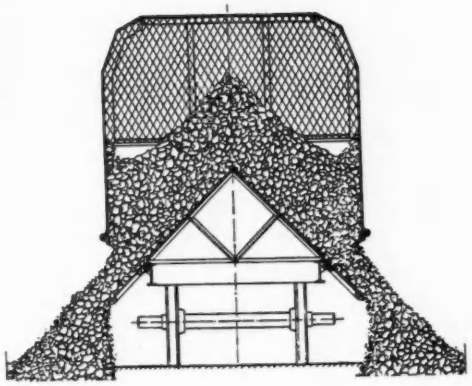
New railway truck for carrying coke

THE Italian State Railways have designed a truck for carrying goods of low specific gravity, such as coke, the transport of which involves trucks of large capacity and which can be unloaded with a minimum of equipment and labour.

The new truck, which forms part of the Class Ltk, fully meets those requirements.

In fact, the operation of the levers placed on the platform of the truck produces automatically and in a negligible time the total unloading of the coke, which drops from the hoppers through the special doors.



The truck has the following features: (a) Tare, 11,860 kg. (26,147 lb.); (b) capacity, 58 cu.m. (2,048 cu.ft.), and loading limit A/20, B/24, C/28.

Gas, May, 1960. **10**, 154.

★

Automation in gas cracking plant

ECONOMIC reasons are the cause of the steadily increasing proportion of town gas in Germany produced from liquefied gases. After vaporisation, these gases are too heavy to be introduced directly in to any town gas system and are therefore subjected to a cracking process.

In the cracking plant, the liquid gas feed is conveniently controlled manually in accordance with the demand, and automatic control is used only for the regulation of the mixing ratio before these gases enter the reactor vessel and the adjustment of the calorific value of the town gas at the outlet of the plant.

Supervisory equipment automatically shuts down the plant if the feed of liquefied gas drops below a certain minimum, if the amount of process air is too large or too small, and if the reactor temperature is too low or too high.

—*G. Eifert, Gas-Wärme*. June, 1960, **9**, 206.

BOOK REVIEWS

PETROLEUM GEOLOGY

By Kenneth K. Landes

THE second edition of this book published by John Wiley & Sons, Inc., of New York by K. K. Landes, Professor of Geology of the University of Michigan, can be divided into three parts. The first two chapters deal with the background of the professional petroleum geologist, and with oil and gas drilling methods, the next two chapters with the techniques of the petroleum geologist and the rest of the book with the occurrence of petroleum.

The book is written for the student of petroleum geology whether at college or on the job, and this in itself is indicative of the speed with which this particular technology is advancing. It would seem in fact quite impossible for any except the brilliant few to keep up with all its phases even while practising their profession.

The increased interest of the gas industry in the exploration and discovery of natural gas and its storage in large quantities underground may well help to increase its interests in any book on this particular subject.

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BRITISH LOCOMOTIVES

THIS well-produced book of some 80 pages should help to put over any claims Britain may have to build some of the best locomotives in the world. Whether they are electric, diesel or steam powered, British-made locomotives of all types are available for export or for the home market, and this does not include any of those built in the workshops of British Railways for their own use.

Illustrations in full colour of the latest electric and diesel locomotives now being delivered to British Railways help to impress on the reader the ultimate goal which the Transport Commission hope to attain.

Divided up into a number of sections dealing with different aspects of the demand for British-built locomotives the book discusses railway modernisation in relation to modern motive power, and the types of locomotive available, in simple language.

Any review of this kind would not be complete without some reference to the earliest locomotives, and Rocket, Locomotion and No. 1 Billy get honourable mention, so also do many other famous locomotives of earlier years built by members of the Association. Railway modernisation overseas in relation to the export of locomotives from this country is also dealt with in a chapter to itself, and here particularly the success of such exports all over the world is most reassuring.

Finally, a chapter on the use of locomotives in British industry and a word for the future, help to bring home to the reader that, though drastic changes are likely, railways will continue to have their place in the modern economy.

LOCOMOTIVE AND ALLIED MANUFACTURERS' ASSOCIATION OF GREAT BRITAIN

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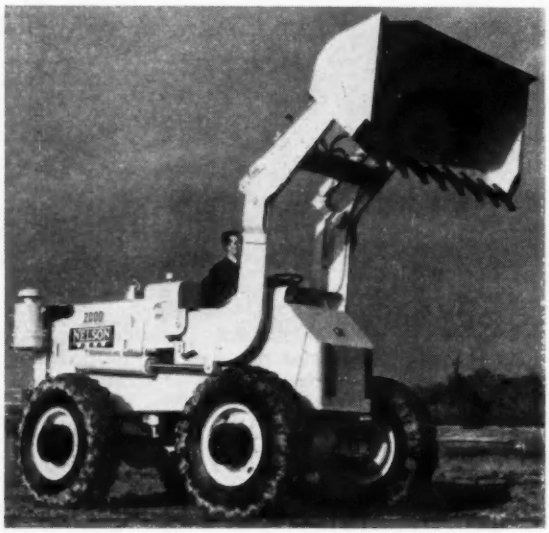
Technical developments

American tractor shovel now in England



THE Nelson tractor shovel, model 200D, is being marketed by Merton Engineering Co. Ltd., as an addition to their existing range. A product of N.P. Nelson Iron Works of New Jersey, the model 200D and the slightly smaller 150D, which have been operating in the U.S.A. for the past three to four years, are part of a range of loading and construction equipment which this company has been manufacturing for over 40 years.

The Nelson 200D is powered by a 105 h.p. diesel engine and has, as standard equipment, a 2¼ cu. yd. rate capacity bucket capable of lifting a 13,000 lb. load. The bucket has 40° crowd at ground level and a discharge angle, at maximum height, of 50°. Maximum clear discharge height is 9 ft. 6in. ('load-over' 12 ft. 3 in.) with a forward reach, at this height of 2 ft. 2 in. The manufacturers claim that these figures are unequalled in any other loader of comparable size.

Power is transmitted to the driving axles by an Allison Torqmatic transmission consisting of a torque converter, planetary transmission and transfer gears; all clutches are hydraulically operated and run in oil and the torque converter has a stall ratio of 3.5 to 1. The transmission gives three forward and three reverse speeds (from 3.5 to 27 m.p.h.) and quick-shifts under full load at maximum throttle without interrupting the power flow from the engine to the load. It also incorporates rear axle disconnect for road travel.

Timken-Detroit driving axles incorporate heavy duty hypoid torque proportioning differential gearing plus planetary final drives in the wheel hubs. Standard tyres are 14.00 by 24 (12 ply) with 16.00 by 24 (12 ply) as optional extra equipment where high flotation is needed. Steering is power-assisted to the rear wheels. Working brakes on all four wheels are hydraulically operated, vacuum boosted; in addition, a mechanical parking brake operates on the transmission forward output shaft.

Hydraulic power is provided by a gear-type pump driven from the transmission, with an output of 48 g.p.m. (181 litres p.m.). The control valve is of the two-spool type with built-in adjustable relief valve. All rams are double-acting with chrome-plated piston rods and diameters of 6 in. (main lift rams) and 4½ in. (bucket rams).

It will be noticed that, in the design of the Nelson tractor shovels, particular attention has been given to accessibility and operator comfort. The clean, spacious lay-out of engine, transmission and ancillary components gives ample room for easy and efficient performance of all maintenance and service operations. The driver's cab is comfortable and roomy, with excellent all-round visibility and controls conveniently placed for minimum fatigue. Nine gauges give the operator full information about temperatures, pressures, r.p.m., etc.; full working lights, front and rear, are standard equipment.

The second model at present available in the Nelson range is the model 150D, with 96 h.p. diesel engine and 1⅜ cu.yd. rated capacity bucket. Other constructional details, transmission, axles, etc., are similar to the model 200D. Maximum clear discharge height is 9 ft. 0 in. ('load-over' 11 ft. 6 in.) with an outreach of 2 ft. 0 in. and the bucket has a lifting capacity of 9,000 lb.—*Merton Engineering Co. Ltd.*

Electronic gas detector

AN electronic detector of explosive gases has been produced by IEC—Sieger. The instrument is sensitive to all inflammable gases, requires no adjustment for coal gas, bottled gas and petroleum vapour, is spray and water proof, fully operative in humid conditions. The detector head is located in danger zone, and has a dual alarm at control point.

The IEC—Sieger detector head instantly signals the presence of a concentration of inflammable gas to a dual warning system which automatically gives an audible and visual alarm. The detector is flexibly connected to the control box, a corrosion-proofed metal case. A green light indicates when the detector is switched on. Alarm signals, a ringing bell and a red light, continue while a gas concentration persists.

In this instrument catalysts are impregnated in an insulating material which is heated by wire coils, part of a balanced circuit. Similar insulating material and coils form, with the detector lead, the other arm of the circuit. These catalysts react to inflammable gas by increasing the temperature and electrical resistance of the coils, therefore unbalancing the bridge.

Electrical unbalance caused by a gas is amplified by a transistor in a special feed-back circuit which operates a relay and the dual alarm system. Because several catalysts are combined in this system, it is sensitive to all inflammable gases and consumes less than ½ ampere.

Ambient temperature changes affect both wires equally and the circuit remains balanced. The detector is equally unaffected by pressure changes. Detector elements are protected by gauze against flashback.—*International Engineering Concessionaries Ltd.*

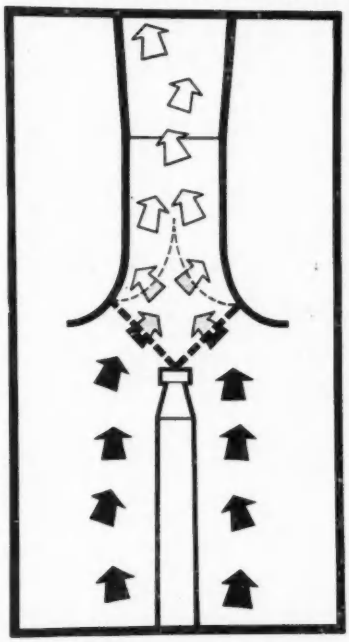
Venturi scrubber

IN the Ambuco venturi scrubber (which is made under licence from Waagner-Biro) the water is introduced ahead of the venturi by means of a special nozzle spraying directly into a specially shaped entry. The design of the entry is so arranged that the gases are compelled to pass through two complete cones of water.

In the first cone, the water droplets are of a relatively large size and are primarily effective in collecting the coarser solid particles. In the second cone (produced by the venturi entry shape) the droplets are considerably finer and their velocity is reduced.

At the same time the velocity of the gas and dust particles increases as it passes the venturi. This results in ideal conditions for the collision of the dust particles and fine water droplets, with consequent maximum collection efficiency of the finest of particles.

For effective gas scrubbing, the size of the water droplet must be varied to meet varying sizes of solid particles. In the Ambuco scrubber, droplet size is controlled by positioning the water introduction nozzle relative to the venturi entry. This enables optimum results to be obtained for any given set of conditions. And, whatever droplet size is selected, the double scrubbing principle is maintained.



Ambuco provide a full engineering and design service in connection with gas cleaning and dust control and handle everything from the design stage through to commissioning. Engineers are available to undertake sampling at the site and, where necessary, a pilot plant demonstration can be arranged. A brochure explaining the Ambuco scrubber is available, and any further information will gladly be given on request.—*Ambuco Ltd.*

Domestic accelerator

THE Daxel Mopump accelerator is specifically designed for domestic and other small installations, and is eminently suitable for small bore central heating applications. This accelerator is easy to install since it screws directly into pipework, and may be mounted on a horizontal, vertical or inclined plane. It requires no maintenance because its glandless construction ensures that there is no leakage and the motor is self-lubricating. The publication that refers to the Daxel Mopump is No. 1598.—*Rhodes, Brydon and Youatt Ltd.*

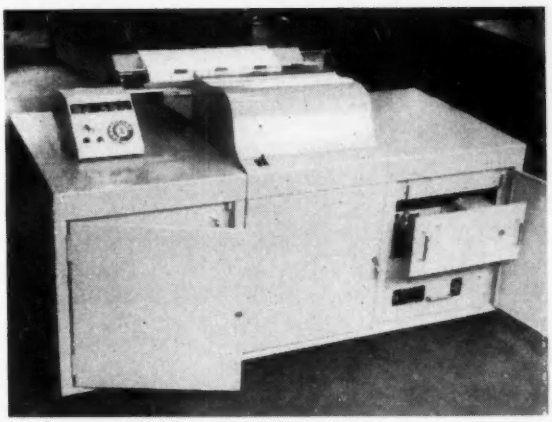
New information system

BAILEY METERS AND CONTROLS LTD., have developed the Digilog information system, which is a reliable means of gathering data and displaying it in numerical form. Essentially, it sequentially selects analogue signals, measures them and then converts them to digital form, suitable for printing onto a log sheet.

In addition to the automatic logging process, the Digilog will give an alarm signal when important readings are departing from safe and efficient conditions. These readings are printed in red, in contrast to the normal black figure logging. The Digilog can also be adjusted to continuously scan all the inputs and only print out and alarm when an input signal deviates from pre-set limits.

To overcome the chart storage problem which would arise if every input signal were logged, a short term, magnetic tape memory can be installed as part of the Digilog system. Thus, the Digilog will scan all inputs and when an alarm condition arises, the plant engineers will have available for their guidance, all the necessary information to determine the plant trends during say, the hour previous to the alarm.

Remotely-sited channel monitors can be provided with the Digilog system. This facility enables a supervisor to break in on a scan and by dialling a particular input channel, on a telephone type dial, obtain the reading at that moment. The reading and channel identification is presented on a digital tube display unit and it can be arranged that the reading is corrected each time the Digilog scans the channel being monitored.



During the development work on the Digilog, it became obvious that the conventional electric typewriter was not sufficiently robust to withstand continuous 24-hour operation and it became necessary to design a reliable method of chart movement. This enabled a number of features to be included, one of which is the presentation of information in schematic form. For instance, the temperature distribution pattern inside a nuclear reactor can be printed onto a log sheet which is moved diagonally, so that the information is placed on the log sheet in a position which is in the correct spacial relationship to the other information.

All these features are available individually, or combined as required to meet the particular application requirements.—*Bailey Meters and Controls, Ltd.*

NEWS SUPPLEMENT

Oil gasification research costs

GAS industry expenditure on oil gasification research was the subject of a recent Commons question to the Minister of Power by Mr. E. Wainwright (Lab., Dearne Valley). He wanted to know how much money was spent on this project in 1957, 1958 1959, 1960 and the estimated figure for this year.

The Minister of Power, the Hon. Richard Wood, said: 'An estimated £146,000 in 1957-58; £249,000 in 1958-59; £227,000 in 1959-60; £290,000 estimated for 1960-61 and £176,000 forecast for 1961-62. These amounts cover some work which will help with coal gasification'.

Mr. Wainwright: 'While appreciating the figures given, and knowing full well that research will have to take place and does take place, may I ask the Minister to consider arranging for discussions between the officials of the gas industry and the N.C.B. on the whole question of research? Will he ask the gas industry not to neglect the question of gasification of coal by the Lurgi system?'

Mr. Wood: 'I am sure the gas industry will not neglect that system because two plants are being built and one will go into operation in the fairly near future. As to the main question of research, the gas industry and the coal industry are considering that matter very carefully at the moment in the light of recommendations in the Wilson Report'.

OTTO PLANT ORDER

A CONTRACT for the supply and erection of an Otto continuous reforming plant to produce 5 mill. cu.ft. of town gas a day from commercial butane has been awarded to Simon-Carves Ltd., by the West Midlands Gas Board.

The plant is to be erected at the Nechells Works, Birmingham.

NEW FOAM METHOD BEATS TOWER PURIFIER BLAZE

A NEW fire-fighting technique beat a blaze in a 70-ft. high purification tower in the centre of the East Midlands Gas Board works at Litchurch, Derby.

The tower is one of a group of 16, and six appliances with 25 firemen aboard raced to the scene to prevent the flames spreading to nearby installations.

The fire, which started when the tower overheated, sent up a huge pillar of smoke visible for miles around, and burned so fiercely that the 1-in. thick steel plates of the tower buckled, and thick sulphur fumes added to the hazards faced by the firemen.

The new technique allowed foam to be pumped onto the tower from the top of a 75-ft. turntable escape ladder.

AFTER TWO YEARS

A fire brigade spokesman explained: 'Without the new method, which has taken two years to develop, we would not have been able to pump foam from that height.

'Previously foam had to be made close to the point where it was needed. Now we have invented a method of mixing the foam in one pump and using another to pump it along the hose.

'We have found that it can be pumped successfully up to a height of 100 ft.'

It took two-and-a-half hours to bring the flames under control, and the fire was finally beaten by a huge crane which swung a steel lid from a neighbouring tank and lowered it onto the burning tower.

W. AUSTRALIA GAS MAKE HAS GROWN

THE annual report for the year ended June 30, 1960, of the State Electricity Commission of Western Australia, which covers both gas and electricity, shows that the quantity of gas manufactured during the year was 1,147.015 mill. cu.ft., an increase of 1.4% on the figures for gas manufactured during the previous year. About 66% of the gas manufactured was produced in the carburetted water gas plant using Collie coal and oil.

The calorific value of the gas sent out was 479.93 B.t.u. a cu.ft. The declared standard calorific value of the Commission's gas is 478 B.t.u. a cu.ft.

The maximum daily output of gas was on June 16, 1960, when 3.909 mill. cu.ft. were made.

A chlorinator for cooling water at the gas works has been purchased and is being installed.

The refrigerant plant which was installed in the previous year to remove gum forming compound and water vapour from the gas, is operating satisfactorily.

Distribution

A 25-in. high pressure gas main was constructed to reinforce the supply to Subiaco, Nedlands, Claremont, Shenton Park and Swanbourne areas.

During the year, 1,867 yards of high pressure main and 21,354 yards of low pressure main were laid.

These extensions make a total of mains in service of high pressure, 66,611 yards; low pressure, 1,035,174 yards.

Man collapses in boiler, dies

AN insurance company inspector has died after being trapped for more than an hour in a gasworks steam boiler 50 ft. above the ground.

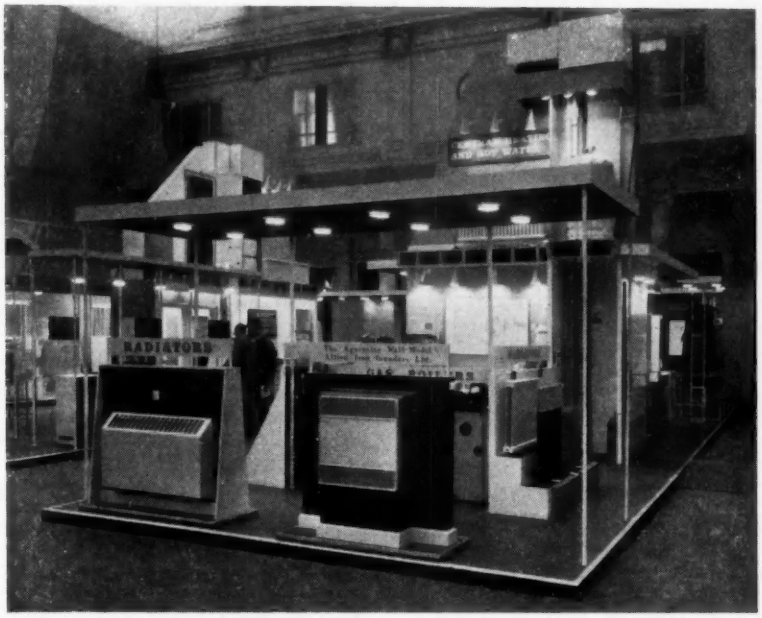
He was Mr. Arthur Sinclair, of Greenslate Road, Orrell, Wigan, who was found after he had failed to answer a series of pre-arranged tapping signals with workmen outside the boiler.

Mr. Sinclair was freed by firemen.

He collapsed while making his inspection and his feet had become wedged under racks of pipes lining the boiler.

An official of the North Western Gas Board told *The Guardian* Mr. Sinclair was making a routine check on the boiler.

In the discussion of M. Odier's paper which was published in the issue of February 15, it was reported that Mr. W. M. Parnall was employed by Ascot Gas Water Heaters Ltd. Mr. Parnall is of course with the Eastern Gas Board.



Some of the many radiators on show at the Comfort in the Home Exhibition, at the Royal Horticultural Hall, London, S.W.1., from February 7-18. The Exhibition was sponsored by the Eastern, North Thames, South Eastern and Southern Gas Boards.

£300 competition for a commercial kitchen plan

CATERING students throughout the country have the chance to design their own ideal commercial kitchen layout and win a prize in a £300 competition organised by the Gas Council. It is the second 'plan-a-kitchen' competition to be arranged in connection with the Hotel and Catering Exhibition at Olympia. The first was held in 1959/60.

Students have to submit on a special entry form a scale plan setting out the equipment necessary for the preparation of any number of lunches and/or dinners not exceeding 300.

They are also required to describe, in not more than 250 words, the type of establishment served and any special features.

Entries, which will be judged on the economic use of kitchen space, have to be in by May 31, 1961.

Models on show

Models of the first three winning entries will be shown on the Gas Council's stand at next January's Hotel and Catering Exhibition. The prizes of £50, first, £30, second, £20, third, and 20 others of £10, will be in Premium Bonds or National Savings Certificates, and will be presented at a reception in London during January.

The Council is also awarding a trophy to be held for the two years between competitions by the winner's college.

Entry forms, which can be obtained by students only through their own colleges, must be sent to the Gas Council, Murdoch House, 1, Grosvenor Place, London, S.W.1.

After Lurgi: Redundancy terms

THE gasworks at Leslie, Leven and Kircaldy are to close down by March 31, when the Lurgi gas plant at Westfield, Fife, starts production to the areas served by these works.

A spokesman for the National Union of General and Municipal Workers said in Kirkcaldy that a meeting had been held at Kirkcaldy gasworks to discuss the Scottish Gas Board's redundancy terms.

'We are quite pleased with the terms,' he said.

The Board's plan is that only men with less than five years' service with them will be redundant. If the close-down comes before March 31 all the men will be paid full wages until then.

Some men who will be kept on will be transferred to other jobs, and some may face a drop in wages of up to £4 weekly.

The retained men will be given priority on jobs at the Lurgi plant, and for about two years the Kirkcaldy gasworks will be maintained as a stand-by station.

U.K. oil exports earned £104 mill. in 1960

BRITAIN earned more than ever before in 1960 from exports of petroleum products refined in the United Kingdom. A total of some 8,700,000 tons was shipped abroad (apart from quantities supplied as bunkers to ocean-going vessels), and was valued at over £104 mill. as compared with £95 mill. for 1959, says a report in *The Times*.

In addition, further substantial sums were received in respect of exports of petrochemicals, estimated to total some £30 mill., a figure which does not include the petrochemical content of many finished products such as detergents.

So far as the main petroleum products are concerned, fuel oil figured first on the list in terms of tonnage.

Exports amounted to 3,166,000 tons, with those of gas oil standing at 2,295,000 tons.

Motor spirit was also prominent, coming third with 1,725,000 tons.

Kerosine, lubricating oils and diesel oil together totalled just over 1,500,000 tons and accounted for almost all the remaining exports.

CENTRAL HEATING COURSE

A SHORT course on modern methods of central heating for domestic and small premises has been organised for March 15 and 22 at Exeter Technical College, Hele Road, Exeter, by the Regional Council of Further Education for the South West, in conjunction with the Exeter Education Committee.

The course has been arranged by the Southern Area Fuel Technology Advisory Sub-Committee of the Council because of the growing demand for central heating in private residences and small commercial premises.

Among speakers on 'Alternative sources of heat' at the afternoon session on March 15, will be Mr. W. T. Lane, Education and Training Officer, South Western Gas Board.

LURGI: MAJOR ADVANCE, SAYS ROBENS

THE Scottish Gas Board's Lurgi high pressure gasification plant at Westfield, Fife, was referred to by the Chairman of the National Coal Board, Mr. Alfred Robens, in an address to the National Industrial Fuel Efficiency Service conference at Glasgow.

He called it a 'development of the utmost significance for the Scottish—and indeed the British—economy, and one which I shall follow with the closest interest.'

EFFICIENT HEAT

He said: 'This £6½ mill. project is the first of its kind in Britain and among the first half dozen in the world. It is a process for the complete gasification of coals which are cheaper and in more abundant supply than those used by conventional gas-making processes.

'The Westfield plant is currently producing some 6 mill. cu. ft. of gas a day. This will be stepped up within the year to 15 mill. cu. ft., and to twice that in 1962, when the plant's annual coal consumption will be nearly quarter of a million tons.

'I am convinced that this marks a major advance in the efficient production of heat and power in this country, and that similar plants will be built elsewhere in Britain.'

LINEPIPE DEMAND HAS EASED

ORDERS for the oil and natural gas industries—mostly for export—had fallen, mainly because of the lack of demand for line pipe for large projects, said Mr. A. G. Stewart, chairman of Stewarts and Lloyds, Ltd., at the 71st annual general meeting in Glasgow.

He added: 'Our sales of other iron and steel products have been maintained during the first three months of the financial year.

'It is too early to give any reliable estimate of profits for the current year, but, unless present trading trends improve, profits will be lower than those for the financial year just ended.'

With a view to further expanding primary iron and steelmaking capacity, the board had approved a plan aiming at increasing capacity at the Corby works by 450,000 tons of pig-iron and 450,000 ingot tons of steel.

Mr. Stewart hinted that interim and final dividends may be more equalised in future.

'Should any increase in the interim dividend be announced during the present year,' he said, 'this will be solely with the intention of reducing the disparity.'

Minister visits E.G.B. headquarters

THE Minister of Power, the Hon. Richard Wood, accompanied by his private secretary, Mr. H. Scholes, has visited Radiant House, Watford, where he lunched with members of the Eastern Gas Board, the Secretary, chief functional officers and Mr. T. C. Battersby.

A small display of maps, charts and photographs had been prepared and the Minister spent some time after lunch discussing these with the Board's chief officials.

The Board's policies and some of its particular problems were explained to him in an informal way and he showed a great interest in all aspects of the Board's activities.

The original programme for the visit had included a tour of the St. Albans new carbonising plant and automatic coke bagging equipment but the arrangements had to be altered owing to an enforced change of plans.

The Minister has expressed a wish to visit St. Albans works another time.

The Minister of Power, the Hon. Richard Wood, is welcomed at Watford by (left) Mr. John H. Dyde, Chairman of Eastern Gas Board.

Another battery of 26 coke-ovens has been lit at the new Greatham (Durham) Works of the South Durham Steel and Iron Co. Ltd. The works will have 78 coke-ovens. The first batch of 26 was lit last July, and the last battery is nearing completion.

A.P.V. AWARDED U.K. CONTRACT

THE Chemical Engineering Division of the A.P.V. Co. Ltd. has received an order from Bitmac Ltd. for the design, supply, erection and commissioning of a complete new benzole refinery.

It will process 8 mill. gal. per year of crude coke oven benzole. In addition to the design and construction of the plant, A.P.V. will be responsible for the civil and electrical engineering.

The value of the contract will be in excess of £300,000.

The refining process will be completely continuous and will incorporate the new A.P.V. continuous defronting and pulsed colum acid washing units, which permit the production of benzene containing as little as five parts per mill. of total sulphur.

No motor benzole

In addition to high purity benzene and toluene products the plant will also produce an indene-rich fraction and a 3° xylole fraction; no motor benzole will be produced. Extremely high yields of these high grade products are guaranteed, as is an overall steam consumption of approximately 9.5 lb. per gal. of crude benzole (including that for acid tar steaming).

This refinery will be installed at Llanwern on the Spencer Works site of Richard, Thomas and Baldwins Ltd's new steel plant, and will be the third large benzole refinery to be built by A.P.V. in the U.K. since 1958.

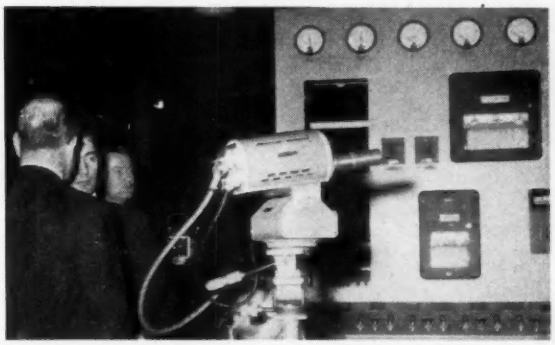
Management needs change of heart: Education Minister

ONE of the first essentials in improving management education must be a change of heart in board-rooms and among the older managers themselves, said Sir David Eccles, Minister of Education, speaking at the first meeting of the new United Kingdom Advisory Council on Education for Management.

Sir David said that many firms were now so big and their business so complicated that they needed to look closely at the quality of their managers. 'Management today involves relations with Government and trade unions, and requires team work between men with all kinds of special skills and qualifications.

'This means that the managers themselves have to study the art of combining the best use of physical assets with a deep understanding of the human problem.

'The new Advisory Council can do a great deal in filling in the gaps in our facilities for management education.'



Senior engineers in the gas industry saw demonstrations recently of closed-circuit television for monitoring process measurements.

The exceptions

PUBLIC relations officers employed by Government Departments and large industrial and other concerns could be excluded from many of the criticisms directed at public relations and advertising agencies.

This statement was made by Mr. Jeffrey Preece, Midland Industrial Correspondent to the B.B.C., who was chairman of a discussion called 'Enterprise' broadcast by the B.B.C. Midland Region, in which three public relations officers were questioned by Mr. Cyril Ray, a journalist.

One of the men under fire was Mr. William Kidman, Public Relations Officer to the West Midlands Gas Board.

Mr. Ray was particularly critical of consultant agencies and the methods which he said they adopted in order to achieve publicity.

Mr. Kidman said that so far as his own Public Relations Department was concerned, he was most careful to see that nothing was sent out unless it was of interest as genuine news.

Holder section traps body of child, 3

THE 100-ton outer section of a gasholder had to be raised to recover the body of a three-year-old boy at Castleford. The boy—Graham Wormersely, of Kassell Street—was drowned when he slipped through a 1-ft. gap between a well wall and the gasholder into 28 ft. of water.

His body was located after a five-day search by firemen, police and North Eastern Gas Board workmen.

When men using grappling irons failed to recover the body, 300,000 cu.ft. of gas were drawn to lower the gasholder and 700,000 gal. of water were pumped from the well below.

A policeman descended the well and confirmed that the child's body was trapped under the 100-ton section.

Engineers see television monitoring

DEMONSTRATIONS of the use of closed-circuit television for monitoring process measurements—as an alternative to conventional telemetering—have been held under the auspices of Woodall-Duckham Construction Co. Ltd. in the main instrument-panel assembly department of George Kent Ltd., Luton.

The TV equipment was provided by Pye Ltd., of Cambridge.

Visitors, who included senior engineers of the gas industry, were able to see for themselves comparisons of picture clarity in various light-intensity environments with camera equipment providing panoramic and close-up shots in association with 8½-in. and 14-in. standard monitors and a 14-in. high-precision monitor.

During the day, between breaks for lunch and tea, the parties of visitors were also afforded the opportunity to see for themselves in advance some of the items in a whole new range of forthcoming Kent measuring and controlling equipment.

Duke is Patron

The Duke of Edinburgh has consented to be Patron of the International Conference on Heating, Ventilating and Air Conditioning at Olympia, London, from September 27 to October 4, 1961. The London County Council is giving a reception for all delegates at County Hall.

Stockpiles cut

The National Coal Board has reduced its stockpiles at collieries and opencast sites during the first five weeks of this year by nearly 3 mill. tons.

This is more than twice the size of the reduction in the comparable period of 1960.

The Yorkshire Tar Corporation has purchased and cancelled to date Loan stock to the nominal value of £231,819, says the *Financial Times*.

PERSONAL NOTES

MR. R. P. NEWMAN, has been appointed head of the Members' Service Department of the British Welding Research Association in succession to MR. P. H. R. LANE, who has been appointed Director of Research of the Drop Forging Research Association. MR. T. R. GURNEY, will succeed Mr. Newman in charge of fatigue research at the British Welding Research Association.

MR. J. ALLEN, Joint Managing Director of Sidney Flavel and Co. Ltd., manufacturers of gas and solid fuel appliances, recently made a presentation to four employees who have completed 25 years service with the Company. These presentations bring the number of long service awards made by the Company to a total of 60.

MR. A. W. JOHN has been appointed finance member of the National Coal Board in succession to the late MR. H. W. HEMBRY. Mr. John had been director-general of finance to the board since 1955. MR. D. M. CLEMENT has been appointed his successor as Director-General of finance.

The Minister of Power has reappointed MR. K. G. POLAND of Liphook, Hampshire, to be a part-time member of the Southern Gas Board.

MR. WILFRID BAILEY who has been Secretary to the Gas Council since 1958, has been appointed Deputy Chairman of the Southern Gas Board as from August 1, 1961. He was born at Cullingworth, near Bingley, Yorkshire, 50 years ago, and was educated at Keighley Grammar School. He began his career with the Bingley Urban District Council, moved to Wednesbury, near Birmingham, in 1931, and in 1940 became deputy borough treasurer at Pontypridd. He held a similar position at Willesden from 1942 to 1945, when he was appointed borough treasurer at Bexley, a post he held until 1947. He was then appointed chief finance officer to the Crawley Development Corporation. In 1949 he joined the Gas Council as chief accountant. Mr. Bailey qualified as an Incorporated Accountant and is a Fellow of the Institute of Municipal Treasurers and Accountants. From 1951 to 1957 he was a member of the Council of the Institute. He is a Fellow of the British Institute of Management and a member of the Council of that Institute.

MR. D. D. MELVIN, of Edinburgh, has been re-appointed a member of the Scottish Gas Board.

COMING EVENTS

March 3.—I.G.E., MIDLAND SECTION: Byng Kenrick Suite, College of Technology, Gosta Green, Birmingham. 'The Storage and Handling of Light Distillate for Large Scale Gas-making,' by C. P. Astbury. 2.30 p.m.

March 4.—YORKSHIRE JUNIORS: Bradford. 'Warm Air Heating,' by D. Brear.

March 4.—EAST OF SCOTLAND JUNIORS: Albany Street Social Club, Edinburgh. Joint Meeting with Scottish Western Juniors. Address by Dr. A. E. Haffner. 3 p.m.

March 7.—MIDLAND JUNIORS: Staff Mess Room, West Midland Gas Board, Birmingham District, Council House, Birmingham. Short Paper Evening.

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